

## Remarks/Arguments

The Office Action of June 6, 2005 and the references cited therein have been carefully studied and reviewed, and in view of the foregoing Amendment and following representations, reconsideration is respectfully requested.

The specification has been amended slightly to correct minor errors.

Also, the minor error in claim 1 noted by the Examiner has been corrected. Accordingly, it is respectfully requested that the objection to claim 1 be withdrawn.

Similarly, the dependence of claim 3 has been corrected. Accordingly, the rejection of claim 3 under 35 USC 112, second paragraph, has been overcome.

Finally, claim 1 has been amended and claim 2 has been rewritten in independent form so as to more clearly patentably distinguish the present invention over the admitted prior art of FIG. 2 (APA), and the references to Grimbergen et al. (USP 6,835,275), Kim et al. (US 2002/0014203), and Suk et al. (USP 5,748,297). All of the limitations contained in the amendments to claims 1 and 3 can be found in Applicant's original specification or appear in the original drawings. Accordingly, the amendments to the claims contain no new matter.

Turning now, then, to the rejection under prior art, Applicant's claim 1 calls for a processing chamber 12, a monitoring window 20 having a flute 22 at an inner surface thereof that faces the interior of the processing chamber 12, and an optical detector 16 mounted outside the processing chamber and in alignment with the flute 22.

Moreover, claim 1 recites a heater 24 positioned to provide heat that is more concentrated at a portion of the monitoring window 20 provided with the flute 22 than at the other portions of the monitoring window, as shown in FIG. 3. Please refer to pars. [0070] and [0135] of Applicant's original specification.

The APA includes a processing chamber, a monitoring window 14, and an optical detector 16 mounted outside the processing chamber.

Grimbergen et al., like the APA disclose a plasma etching apparatus that includes a processing chamber 35, a monitoring window 130, and an optical detector 160 mounted outside the processing chamber 35. On the other hand, the monitoring window 130 of Grimbergen et al. is provided with a recess 145, and the optical detector 160 is disposed in alignment with the recess 145 of the monitoring window 130.

However, as noted by the Examiner, neither the APA nor Grimbergen et al. disclose any heater associated with the monitoring windows. Thus Grimbergen et al. do not teach providing heat that is more concentrated at the recess 145 than at the other portions of the monitoring window 130.

Kim et al. teach a chemical vapor deposition apparatus that is fundamentally different from the apparatuses of the APA and Grimbergen et al. The chemical vapor deposition apparatus of Kim et al. includes a processing chamber 3, but does not include a detection system comprising a monitoring window and a detector for detecting through the window changes in the process that is occurring in the chamber

3. Rather, Kim et al. merely teach a view port by which the inside of the chamber 3 can be inspected by an operator. The view port includes a window 30 provided in the wall of the processing chamber 3, and a capping member 40 that normally covers the window 30 (pars. [0039] and [0040]). A heating element 60, such as a resistive wire heating element, may be embedded in an insulating member 50 integrated with the capping member 40 to prevent heat loss during the chemical vapor deposition process. Alternatively, the heating element 60 may be embedded in the window 30 itself as the window is not used to monitor changes in the process occurring in the chamber 3 but is merely used to facilitate an inspection of the state of cleanliness inside the chamber.

In any case, the window 30 of the view port of Kim et al. does not include any recess. Moreover, Kim et al. only teach providing the heating element 60 to prevent “heat loss through the window ...thereby suppressing the tendency of polymer to adhere to the window” (par. [0013]). Thus, Kim et al. do not suggest positioning the heating element 60 to concentrate the heat at a flute or recess in a window of detecting apparatus for monitoring the state of a process occurring in a processing chamber. That is, even assuming, *arguendo*, that one of ordinary skill in the art were somehow motivated to add the heating element of Kim et al. to the end point detector of the APA, after that person incorporated a recess into the window as taught by Grimbergen et al., the resulting combination would not have a heater positioned to concentrate the heat at the portion of the window in which the recess was formed.

Thus, the prior art does not render the subject matter of claim 1 obvious under 35 USC 103.

Similar comments apply with respect to claim 2. That is, Suk et al. teach an end point detecting system in which the monitoring window 20 is shaped to have a protrusion 22 in which a recess is defined. However, there are no teachings in the prior art, i.e., there is no suggestion, to modify the heating element 60 of Kim et al. so that it would be centered about the protrusion 22 of Suk et al. Rather, the prior art, particularly the Kim et al. reference, only teaches providing a heating element over the outer surface of or within the window to prevent “heat loss through the window” itself.

Accordingly, the prior art does not render obvious the subject matter of claim 2.

Claim 3 has been amended to differentiate the solid protrusion 26 of the present invention, whose function is to direct heat towards the flute 22 and yet allow process monitoring, from the hollow protrusion of Suk et al. whose function is to form the recess that reduces clouding along the axis of the detector. Accordingly, the subject matter of claim 3 is not rendered obvious by the references even as taken in combination.


For these reasons, namely because of the differences between Applicant’s claimed invention and the references, including the lack of a suggestion in the references of a heater positioned to concentrate heat at a flute in a window of a system

for detecting change in a process occurring in a processing chamber, and especially the lack of suggestion in the references of a heater centered about a rearwardly facing protrusion of such a window, it is seen that the references do not render obvious Applicant's claims under 35 USC 103. Accordingly, early reconsideration and allowance of the claims are respectfully requested.

Respectfully submitted,

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